

12/03/2008

Serial No. 10/538,414
Atty. Doc. No. 2002P17911WOUS

Amendments to the Claims:

1 – 25 (canceled)

26. (currently amended) A process for producing a component from an alloy that can be hardened by precipitations, comprising:

casting the component from a melt of the alloy, wherein the casting step includes
pouring the molten alloy into a casting mold, and
solidifying the molten alloy;

redensifying the component in a furnace immediately after the casting step ~~without cooling of the component after casting~~ and prior to machining or welding; and

~~carrying out overaging the redensified component, in an intermediate step, an improvement heat treatment comprising via~~ an overaging heat treatment on the component immediately after the step of redensifying and in the same furnace without cooling of the redensified component between the redensifying and the overaging steps, such that a holding time for the ~~improvement overaging~~ heat treatment is dispensed with or reduced because it has already been completely or partially effected by a holding time for the redensifying improvement heat treatment, such that the overaging improvement heat treatment coarsens the precipitations, thereby improving the welding and/or machineability of the component, and the improvement overaging heat treatment at least in part being carried out during slow cooling at a cooling rate of 2° to 3°C/min.

27. (cancelled).

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28. (previously presented) The process as claimed in claim 26, wherein a further heat treatment is carried out after the welding and/or machining, so that the microstructure that is set in this way for the areas of use of the component has different properties than without this heat treatment.

29. (previously presented) The process as claimed in claim 26, wherein a subsequent heat treatment, which at least partially reverses the coarsening of the precipitations, is carried out after the welding and/or machining.

30-32. (cancelled).

33. (previously presented) The process as claimed in claim 26, wherein the component is heated up to a set temperature and the improvement heat treatment takes place at least in part through slow cooling.

34-35. (cancelled).

36. (currently amended) The process as claimed in claim 3426, wherein the redensification is carried out by means of hot isostatic pressing.

37. (previously presented) The process as claimed in claim 26, wherein the alloy used is an iron-base, nickel-base or cobalt-base superalloy.

38. (previously presented) The process as claimed in claim 37, wherein the alloy includes the γ' phase.

39. (previously presented) The process as claimed in claim 26, wherein a weld filler of a similar analysis to the alloy is used for the welding.

40. (previously presented) The process as claimed in claim 26, wherein a weld filler which is of the same composition as the alloy is used for the welding.

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41. (previously presented) The process as claimed in claim 26, wherein a weld filler which can be hardened by a precipitation is used for the welding.

42. (previously presented) The process as claimed in claim 26, wherein a weld location is formed during the welding, and in that the at least one weld location is hammered.

43. (previously presented) The process as claimed in claim 26, wherein the alloy used is the material IN 738LC or IN 939.

44. (previously presented) The process as claimed in claim 26, wherein for the improvement heat treatment the component is held at a temperature and then the component is cooled.

45. (previously presented) The process as claimed in claim 26, wherein the improvement heat treatment takes place at least at a solution-annealing temperature of the alloy.

46. (previously presented) The process as claimed in claim 26, wherein the overaging heat treatment takes place at 1180°C.

47. (previously presented) The process as claimed in claim 29, wherein the subsequent heat treatment for at least partially reversing the coarse precipitations is carried out at least in part at a solution-annealing temperature.

48. (previously presented) The process as claimed in claim 29, wherein the subsequent heat treatment for at least partially reversing the coarse precipitations is carried out at least in part during cooling at a cooling rate of from 20°C to 40°C per minute.

49. (previously presented) The process as claimed in claim 41, wherein the precipitations of the weld filler form at least 35% by volume.

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50. (previously presented) The process as claimed in claim 26, wherein the temperature for the re-densification is below the solidus line of the material of the component.